Elytra, *Tokyo*, **33** (2): 671–677, November 19, 2005

Discovery of a New *Calocarabus* (Coleoptera, Carabidae) from the Alpine Region of Southern Gansu, China

Yûki IMURA

Shinohara-chô 1249–8, Kôhoku-ku, Yokohama, 222–0026 Japan

Abstract A new species of the genus *Calocarabus* is described from the alpine region of southern Gansu, China, under the name *C. yangguifei*.

In the summer of 2005, a long series of carabid specimens was obtained from several places of southern Gansu and they were submitted to me for identification and taxonomical study. One of the series was collected from a mountain range lying across the borders of three prefectures, namely, Kangle Xian, Hezheng Xian and Jonê Xian, with the highest point attaining to about 4,000 m. Though its proper name was not found even in detailed atlas, this mountain range lies near the southwestern part of the Longzhong Plateau and is isolated from the Tê Shan Mountains, the northern continuation of the Min Shans, by the Tao He River which is one of the branches of the Huang He River. Anyway, nothing has been known on the carabid fauna of this mountain range up to the present.

The series was composed of several genera such as the *Rhigocarabus*-complex, *Pagocarabus*, *Eccoptolabrus*, the *Neoplesius*-complex, *Pseudocranion* and *Calocarabus*, all inhabiting the alpine zone of the inland area of China. Of these, what I am going to deal with in this paper is a brilliant-colored *Calocarabus* obtained from the highest zone of the same mountain range which is about 30 km south-southwest of Kangle, the prefectural capital of Kangle Xian. The species in question is discriminated from all the hitherto known members of the same genus in both external and male genitalic features and is worth introducing into science. In the following lines, I am going to describe it as a new species under the name of *Calocarabus yangguifei*.

For the application of the generic names of the subtribe Carabina, I follow the higher system proposed by myself (IMURA, 2002), and the abbreviations used herein are the same as those explained in previous papers of mine.

Before going into description, I wish to express my heartfelt thanks to Messrs. Igor BELOUSOV (St. Petersburg, Russia) and Ilya KABAK (Almaty, Kazakhstan) for their kind cooperation in various ways. Thanks are also due to Dr. Shun-Ichi UÉNO (National Science Museum, Tokyo) for reviewing the manuscript of this paper.

Calocarabus yangguifei IMURA, sp. nov.

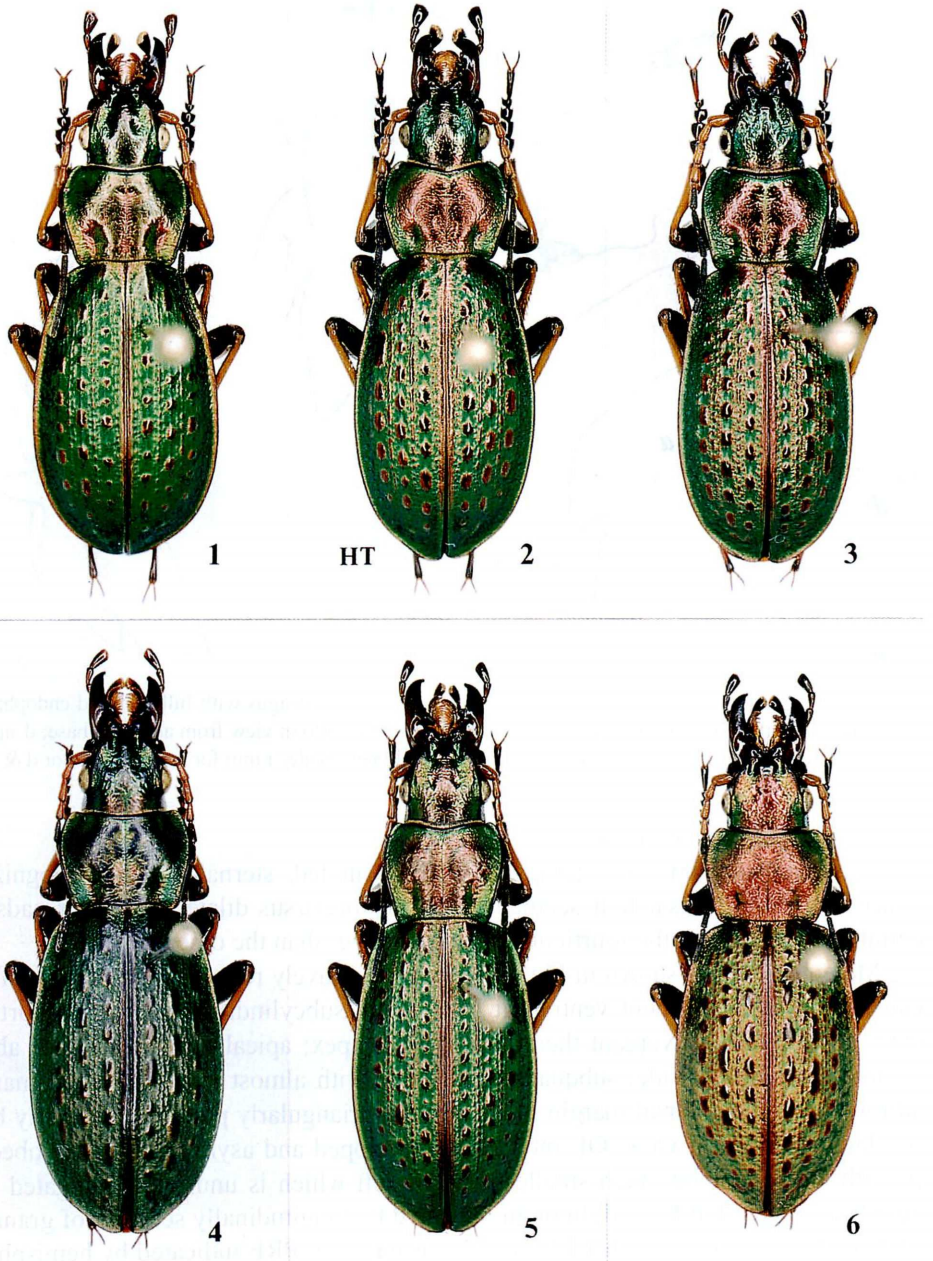
(Figs. 1–7)

Description. Length (including mandibles): ♂, 15.5–18.7 mm; ♀, 16.5–21.5 mm. Upper surface of body smaragdine green, more or less bearing a reddish coppery tinge on head and pronotum above all in median portions, or yellow-reddish coppery bearing a greenish tinge in marginal areas of head, pronotum and elytra; elevated parts of elytra brownish black with the peripheral portion of each elevation and sutural parts reddish coppery bearing a faint purplish lustre; appendages dark reddish brown with the exception of basal four segments of antennae and tibiae which are yellowish brown.

Head as in other members of the same genus, though macrocephaly is not so remarkable in both sexes with relatively large eyes; frons weakly or moderately convex above and weakly rugoso-punctate; frontal furrows wide, deeply concave and irregularly rugulose on the surface; vertex to neck sporadically scattered with small punctures and finely wrinkled; retinaculum of right mandible bidentate, with the anterior tooth thicker and usually larger than the posterior which is more sharply pointed at the tip; retinaculum of left mandible with the anterior tooth very small, posterior adhered to inner margin of mandible to form a large, triangularly shaped projection; terminal segments of palpi a little more widely dilated in male than in female; penultimate segment of labial palpus bisetose; median tooth of mentum much shorter than lateral lobes, with the apex triangularly pointed; submentum asetose; antennae short, only reaching basal quarter of elytra in male and reaching basal fifth in female.

Pronotum transverse cordate, much wider than long and widest near the apical third; PW/HW 1.32–1.38 (M 1.36), PW/PL 1.38–1.56 (M 1.45), PW/PAW 1.27–1.44 (M 1.36), PW/PBW 1.43–1.53 (M 1.47), PAW/PBW 1.02–1.13 (M 1.08); apical margin moderately to deeply emarginate, front angles obtusely rounded and not protruded anteriad; lateral sides distinctly margined throughout, gently rounded in front and nearly straightly narrowed towards hind angles which are weakly and subtriangularly produced posteriad with blunt tips; disc moderately convex above, with the surface weakly wrinkled in median portion, rather scabrous scattering with small punctures and granules in peripheral portion; basal foveae deeply concave and median longitudinal line clearly impressed throughout; three to four marginal setae inserted on either side of pronotum, two to three in medio-anterior portion and one before hind angle.

Elytra oblong-ovate, widest obviously behind the middle, more gradually narrowed towards bases than towards apices; EW/PW 1.37–1.52 (M 1.45), EL/EW 1.56–1.70 (M 1.63); shoulders not so distinct, lateral sides gently arcuate throughout, with margins narrowly reflexed above; sculpture triploid heterodyname — primaries the widest, rather regularly segmented by large, shallow primary foveoles to form rows of large callosities; secondaries much narrower than primaries, indicated by longitudinally arranged rows of large granules, partly becoming contiguous to form irregularly interrupted costae; tertiaries the weakest, indicated by rows of small granules partly adhesive to adjacent intervals; umbilicate series indicated by irregularly and sporadi-



Figs. 1–6. *Calocarabus yangguifei* from SSW of Kangle in southern Gansu. —— 1–3, ♂, 4–6, ♀ (2, holotype; 1, 3–6, paratypes).

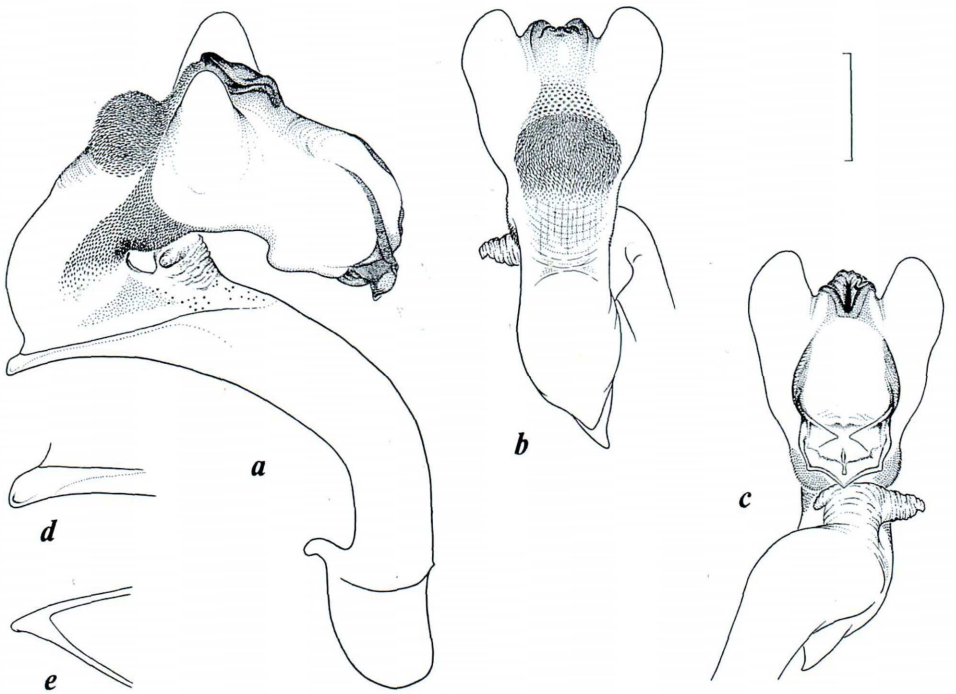


Fig. 7. Male genital organ of *Calocarabus yangguifei*. —— a, Aedeagus with fully everted endophallus in right lateral view; b, ditto in view from aedeagal apex; c, ditto in view from aedeagal base; d, apical part of aedeagus in right lateral view; e, ditto in dorsal view. Scale: 1 mm for a–c; 0.5 mm for d & e.

cally set rows of fine granules.

Episterna and sides of sternites weakly wrinkled, sternal sulci unrecognized; metacoxa trisetose; basal four segments of male foretarsus dilated with hair pads on ventral surface, though the fourth one is much smaller than the other three.

Male genitalia as shown in Fig. 7; aedeagus relatively robust for a member of the genus, rather abruptly bent ventrad at basal third, subcylindrical in median portion, gently arcuate and convergent therefrom towards apex; apical lobe very short, about 1.2 times as long as wide, subquadrate in shape with almost straight ventral margin and roundly arcuate dorsal margin in lateral view, triangularly pointed and faintly bent right laterad in dorsal view; OL moderately developed and asymmetrically bilobed at tip, with the right lobe much smaller than the left which is unusually elongated and strongly projected left laterad; ligulum indicated by longitudinally set rows of granules to form a narrow ridge; neither BL nor ML recognized; PRE indicated by hemispherically shaped hairly inflation; PAR rather strongly and symmetrically protruded dorsad on both sides; PP moderate in size and remarkably pigmented; AL hardly inflated; PL small and weakly protruded ventrad; AGG weakly sclerotized to form a short, subpentagonally shaped terminal plate rimmed along the gonopore.

Fig. 8. Habitat of *Calocarabus yangguifei* (scree slope in the alpine zone, ca. 3,900 m in altitude, SSE of Kangle, in southern Gansu).

Type series. Holotype: ♂, SSW of Kangle [康乐](35°07′36–41″N/103°27′32″–28′01″E), 3,833–3,930 m in altitude, near the borders of Kangle Xian [康乐县], Hezheng Xian [和政县] and Jonê Xian [卓尼县] of southern Gansu, China, 25~27–VI–2005, to be deposited in the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo. Paratypes: 13♂♂, 20♀♀, same data as for the holotype; 3♂♂, 5♀♀, same area (35°06′47″–56″N/103°28′14″–21″E, 3,800–3,960 m in altitude), 26–VI–2005; 1♂, same area (35°07′26″N/103°29′16″E, 3,750 m in altitude), 28–VI–2005, separately preserved in the collections of the Zoological Institute of the Academy of Sciences (St. Petersburg), Y. IMURA (Yokohama) and B. BŘEZINA (Prague).

Notes. Like the other known species of the genus *Calocarabus*, this new species is considerably variable not only in size and coloration but also in body proportion and sculptural condition of the elytra as shown in Figs. 1–6. The smallest specimen of the type series is only five-sevenths of the largest one in body length, and they appear specifically different at a glance.

The new species seems closest to *Calocarabus pingpong* (BŘEZINA & HÄCKEL, 2004, p. 7) described from the Tê Shan Mountains ("SSW Minxian, W-Qilian Shan, 11 km W of Kunda"), but readily discriminated from that species in different coloration of the legs above all that of the tibiae, a little less hypertrophic head with shorter mandibles, smaller number of the marginal setae of pronotum and differently

shaped aedeagus. The new species is also allied to *C. janatai* (BŘEZINA, 1996, p. 7) described from Langmusi near the borders of Gansu and Sichuan, but is distinguished from it by different coloration, a little less hypertrophic head, less strongly developed basal-inner tooth of the left mandible, more prominently convex primary callosities of the elytra and much differently shaped aedeagus. From *C. juengerianus* (KLEINFELD, 1995, p. 229) described from the "Wolong-Paß" on the borders of Gansu and Qinghai, the new species is different in smaller size, different coloration, less hypertrophic head, less remarkably transverse pronotum with shorter hind angles and different configuration of the aedeagal apical lobe. The new species must be compared with *C. mandarin* (KALÁB, 2002, p. 110) described from "25 km SSE Zamtang" of northwestern Sichuan, but the former is readily discriminated from the latter by different coloration of the legs, less hypertrophic head with larger eyes in both sexes, smoother dorsal surface of the head and pronotum, differently sculptured elytral intervals and different configuration of the aedeagal apex. From all other members of the same genus (*C. przewalskii* MORAWITZ, 1886, *C. gratus* SEMENOV, 1887, *C. sewertzowi* SÉMÉNOW, 1898, *C. sifanicus* SÉMÉNOW, 1898, *C. kalabi* DEUVE, 1990, *C. guinanensis* DEUVE, 1991, *C. linxiaensis* DEUVE, 1992, *C. aristochroides* DEUVE, 1992, *C. turnaianus* DEUVE, 1995, *C. trichothorax* BŘEZINA et IMURA, 1997, *C. dietererberi* HEINZ, 2001, *C. sementivus* IMURA, 2005 and *C. nevestimus* IMURA, 2005), the present new species is readily recognized as different species on much different external and/or male genitalic features.

This new species was collected from a scree slope along the ridge in the alpine zone together with several other alpine species which will be recorded and described in other papers of mine now under preparation.

Etymology. The name of the new species comes from *Yangguifei* [楊貴妃] who standed highest in favour of the Emperor Xuanzong [玄宗] in the Tang Age. External appearance like a jewel of this beetle reminds us of this noble lady who is said to have been an extraordinary beauty.

要　　約

井村有希：中国甘粛省南部から発見されたキンスジキンオサムシ属の1新種．—— 中国甘粛省南部康乐县・和政县・卓尼县の境界にまたがる山域は，黄河支流の洮河を挟んで岷山山脈北方の迭山山地よりもさらに北に位置しており，最高地点は標高4,000 mに達するが，これまでオサムシ類の記録はまったくみられなかった．2005年の夏に，同山塊の高所から一連のオサムシ標本が得られ，そのなかにキンスジキンオサムシ属に属する未記載種をみいだすことができたので，新種*Calocarabus yangguifei*として本論文に記載した．既知の同属各種のなかでは，甘粛省の*C. pingpong*や甘粛・四川省境の*C. janatai*，甘粛・青海省境の*C. juengerianus*，あるいは四川省北西部の*C. mandarin*などに近いが，巨頭化の程度がやや弱く，複眼が相対的に大きいこと，前胸背板と上翅の彫刻が異なること，さらに陰茎先端の形態に特徴があることなどによって識別される．本新種は背面の色彩がつよい金属光沢を帯びたエメラルドグリーンから金銅

色へと変化し，美麗種を多く含む同属のなかでもひときわ優美な外観をそなえているため，その美しさにちなみ，中国唐代の美女，楊貴妃の名を与えた．

References

BŘEZINA, B., 1996. A new *Carabus*–species and subspecies from the mountainous regions of Gansu and Sichuan, Central China (Coleoptera, Carabidae). *Coleoptera*, **14**: 7–17.

——— & M. HÄCKEL, 2004. Three new species and one subspecies of *Carabus* (Coleoptera, Carabidae) from Gansu Province, Central China, and description of a male of *Carabus isabellae* LASSALLE, 1985 from central Nepal. *ANIMMA.X, Plzen*, (6): 1–11.

——— & Y. IMURA, 1997. A new subgenus and two new species of *Carabus* (s. lat.) (Coleoptera, Carabidae) from Shaanxi and Sichuan, China. *Gekkan-Mushi, Tokyo*, (312): 3–9. (In Japanese, with English title, description and summary.)

DEUVE, Th., 1990. Nouveaux Carabidae et Broscidae des montagnes Tibéto-Himalayennes (Coleoptera). *Revue fr. Ent., Paris*, (N. S.), **12**: 183–190.

——— 1991. Nouveaux *Carabus* des collections de l'Institut Zoologique de Pékin (Coleoptera, Carabidae). *Ibid.*, **8**: 101–108.

——— 1992. Contribution à l'inventaire des Carabidae de Chine (Coleoptera) (19e note). *Bull. Soc. ent. Fr.*, **96** [for 1991]: 223–242.

——— 1992. Nouveaux *Carabus* et *Cychrus* d'Asie, et note sur l'identité de *Carabus* (*Lamprostus*) *hozari* MARAN (Coleoptera, Carabidae). *Bull. Soc. Sci. Nat, Compiègne*, (75/76): 52–60.

——— 1995. Nouveaux *Carabus* L. et *Cychrus* F. de Chine (Coleoptera, Carabidae). *Coléoptères, Guyancourt*, **1**: 15–36 .

HEINZ, W., 2001. Eine neue *Carabus*-Art der Untergattung *Calocarabus* SEMENOV, 1887, aus der chinesischen Provinz Sichuan (Coleoptera: Carabidae). *Ent. Z., Frankfurt a. M.*, **111**: 147–148.

IMURA, Y., 2002. Classification of the subtribe Carabina (Coleoptera, Carabidae) based on molecular phylogeny. *Elytra, Tokyo*, **30**: 1–28.

——— 2005. Two new *Calocarabus* (Coleoptera, Carabidae) from the alpine region of Southern Gansu, China. *Ibid.*, **33**: 371–375.

KALÁB, J., 2002. Eine neue Art und eine neue Unterart der Gattung *Carabus* LINNAEUS, 1758, aus Sichuan, China (Coleoptera: Carabidae). *Ent. Z., Stuttgart*, **112**: 109–113.

KLEINFELD, F., 1995. Eine neue Art der Untergattung *Calocechenus: Carabus* (*Calocechenus*) *juengerianus* n. sp. (Coleoptera: Carabidae). *Ent. Z., Frankfurt a. M.*, **105**: 229–252.

MORAWITZ, A., 1886. Zur Kenntnis der Adephagen Coleopteren. *Mém. Acad. imp. Sci. St.-Pétersbourg*, (7°), **34** (9): 1–88.

SEMENOV, A., 1887. Insecta in itinere cl. N. PRZEWALSKII in Asia Centrali novissime lecta. I. Tribus Carabidae. *Horae Soc. ent. ross., S.-Peterburg*, **21**: 165–175.

SÉMÉNOW, A., 1898. Symborae ad cognitionem generis *Carabus* (L.) A. MOR. II. *Ibid.*, **31**: 315–541.